

IN THE CLAIMS:

Please AMEND claims 20, 26-31, 37, 40-42, 44, 46, 48 and 49, as follows. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

1-19. (Cancelled)

20. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller controls said first supplier and said second supplier.

21. (Previously Presented) An apparatus according to Claim 20, wherein said first supplier comprises a first valve, said second supplier comprises a second valve and said controller controls said first valve and said second valve.

22. (Previously Presented) An apparatus according to Claim 20, wherein said controller controls a concentration of oxygen in the closed space.

23-25. (Cancelled)

26. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller changes the wavelength of the exposure beam into a wavelength region higher than an oxygen absorptivity when said second supplier supplies the oxygen.

27. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing ~~at least~~ oxygen, into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller changes the wavelength of the exposure beam to a shorter wavelength when said second supplier supplies the oxygen.

28. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;
a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space;
a discharger, which discharges the gas from the closed space;
a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element; and
a laser control device which changes the emission laser wavelength region, wherein said controller controls said laser control device.

29. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;
a first supplier, which supplies an inert gas into the closed space;
a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space;
a discharger, which discharges the gas from the closed space; and
a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element, wherein said controller oscillates the wavelength region continuously.

30. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller controls actuation of said light source.

31. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller inserts a wavelength changing element into a path of the exposure beam.

32. (Previously Presented) An apparatus according to Claim 31, wherein said wavelength changing element is a harmonic wave producing element.

33-36. (Cancelled)

37. (Currently Amended) A device manufacturing method comprising the steps of:
providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies a gas, containing at least oxygen, into the closed space,

(iv) a discharger, which discharges the gas from the closed space, and

(v) a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element; exposing a substrate by use of the exposure apparatus; and developing the exposed substrate.

38. (Cancelled)

39. (Cancelled)

40. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space; and

a controller, which controls concentration of oxygen in the closed space,

wherein said controller functions so that, before exposure of the substrate, the inside of the closed space is filled with substantially only the inert gas.

41. (Currently Amended) A device manufacturing method, comprising the steps of:

providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies a gas, containing ~~at least~~ oxygen, into the closed space, and

(iv) a controller, which controls concentration of oxygen in the closed space;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.

42. (Currently Amended) An exposure apparatus, comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space and the casing;

and

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space.

43. (Previously Presented) An apparatus according to Claim 42, further comprising a discharger, which discharges the gas from the closed space.

44. (Currently Amended) An apparatus according to Claim 42, wherein, in a state in which the gas containing ~~at least~~ oxygen is introduced in the closed space by said second supplier, the beam is projected to thereby clean the optical element.

45. (Previously Presented) A device manufacturing method, comprising the steps of:
providing an exposure apparatus as recited in Claim 42;
exposing a substrate by use of the exposure apparatus; and
developing the exposed substrate.

46. (Currently Amended) An exposure apparatus, comprising:
an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;
a first supplier, which supplies an inert gas into the closed space; and

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space,

wherein, in a state in which the gas containing ~~at least~~ oxygen is introduced into the closed space by said second supplier, the beam is projected to thereby clean the optical element.

47. (Previously Presented) A device manufacturing method, comprising the steps of:

providing an exposure apparatus as recited in Claim 46;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.

48. (Currently Amended) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas₁ containing ~~at least~~ oxygen₁ into the closed space; and

a controller, which controls the first supplier and the second supplier,

wherein said controller functions so that, before exposure of the substrate, the inside of the closed space is filled with substantially only the inert gas.

49. (Currently Amended) A device manufacturing method, comprising the steps of:

providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies a gas, containing ~~at least~~ oxygen, into the closed space, and

(iv) a controller, which controls the first supplier and the second supplier;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.

50. (New) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, both disposed therein, said casing having a closed space and said optical element being accommodated in said closed space;

a first supplier, which supplies an inert gas into said closed space and said casing;

and

a second supplier, which supplies a gas, containing oxygen, into said closed space.

51. (New) A device manufacturing method, comprising the steps of:

providing an exposure apparatus as recited in Claim 50;
exposing a substrate by use of the exposure apparatus; and
developing the exposed substrate.

52. (New) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, both disposed therein, said casing having a closed space and said optical element being accommodated in said closed space;

a first supplier, which supplies an inert gas into said closed space and said casing;
and

a second supplier, which supplies air into said closed space.

53. (New) A device manufacturing method, comprising the steps of:

providing an exposure apparatus as recited in Claim 52;
exposing a substrate by use of the exposure apparatus; and
developing the exposed substrate.